

**REMARKS**

This paper is submitted in response to the Office Action mailed November 19, 2003.

Following this amendment, claims 1, 2 and 5-11 are pending. Claims 1 and 8 have been amended to incorporate the subject matter of claim 12 and claim 12 has been cancelled. Claims 1 and 8 have also been amended to recite a range of greater than 80 and not exceeding 95% for the gel content of the large aperture polybutadiene rubber latex. Support for this amendment can be found throughout the specification and claims as filed and, in particular, at page 12, lines 7-9. Therefore, Applicants submit that there is no new matter added as a consequence of the amendments to the claims.

**The Rejections under 35 U.S.C. § 103(a) Should Be Withdrawn**

Claims 1, 2 and 5-12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,767,833 by Yumoto *et al.*, in view of JP 56-41216. The Examiner alleges that polybutadiene and styrene-butadiene may be used interchangeably to afford transparent thermoplastic resins. The Examiner maintains that the skilled artisan would have found it obvious to use the polybutadiene latex in lieu of styrene-butadiene latex to arrive at the present invention.

Furthermore, claims 8-12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,767,833 by Yumoto *et al.*, in view of JP 56-41216, as applied to claims 1, 2, 5-7 and further in view of U.S. Patent No. 5,200,441 by Kim *et al.* The Examiner acknowledges that neither Yumoto *et al.* nor JP 56-41216 disclose the process claimed for preparing large aperture polybutadiene latex, but alleges that such lattices of larger particle size may be prepared by conventional emulsion polymerization or by agglomeration by acidulation, as

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explained in Kim *et al.*

To establish a *prima facie* case of obviousness, three basic criteria must be met (MPEP 2142). First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to modify the reference or to combine the teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on Applicant's disclosure. *In re Vaeck* 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1981).

Applicants maintain that one of ordinary skill in the art would not be motivated to modify the thermoplastic resin composition of Yumoto *et al.* by using polybutadiene in place of the styrene-butadiene latex. First of all, there is no suggestion or motivation provided in any of the cited art to modify or combine the teachings to produce the claimed invention. Secondly and as discussed in the Amendment mailed September 5, 2003 (page 6), one of skill in the art would not be motivated to substitute polybutadiene for the styrene-butadiene due to the generation of coagulum, which is detrimental to the desired property of high transparency. Therefore, these waste materials must be removed after graft polymerization during processing, increasing the cost of production. For these two reasons, one of skill in the art would realize that this substitution is detrimental to the production of a thermoplastic transparent resin composition. In addition, the presence of coagulum would create little expectation of success of producing a thermoplastic resin composition having the desired property of high transparency.

Without conceding the merit of the Examiner's position, Applicants have amended claims 1 and 8 to recite a range of greater than 80 and not exceeding 95% for the gel content of the large

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aperture polybutadiene rubber. Yumoto *et al.* discloses a range of 10-80%, with a preferred range of 10-60%, for the gel content of the large aperture latex (abstract; col. 2, lines 61-68; Table 1), which does not overlap with the presently claimed range, as amended. In addition, Yumoto *et al.* discloses in Table 1, comparative example 14, a composition which comprises a gel content of 90% for the large aperture latex, which exhibits undesired decreased transparency. Lower Haze values indicate greater transparency. A comparison of comparative example 14 with example 8 (comprising a gel content of 60% for the large aperture latex ) shows that the Haze value for comparative example 14 is higher than the Haze value for Example 8 (10 for comparative example 14 versus 7 for example 8). Comparative example 14 also does not exhibit a desired Izod strength value. Since comparative example 14 exhibits these undesired characteristics, Yumoto *et al. teaches away* from the present invention, wherein the large aperture polybutadiene rubber latex has a gel content of greater than 80 and not exceeding 95%.

Applicants have also amended claims 1 and 8 to recite the subject matter of claim 12, *i.e.*, that a total refraction coefficient of the composition, excluding the polybutadiene rubber latex, is between 1.510 and 1.526. Applicants assert that the present invention, as amended, is nonobvious over the cited art and addresses further concerns of the Examiner, as discussed below.

With regard to claim 12, the Examiner has further indicated that:

In view of the fact that the refraction coefficient of methyl methacrylate, styrene and acrylonitrile are 1.49, 1.59 and 1.518, respectively, and in view of the fact that the amounts of components decreases in the order, methyl methacrylate, styrene and acrylonitrile, it is highly likely that the refraction coefficient lies within the claimed range.

The Examiner further states that the burden is shifted to the Applicants to establish an unobvious difference between the cited art and the present invention.

Applicants respectfully disagree with the Examiner's assessment of the total refraction coefficient of the presently claimed composition, excluding the polybutadiene rubber latex.

Amended claims 1 and 8 of the present invention relate to a thermoplastic resin composition comprising, *inter alia*, (i) 40-70 parts by weight of a methacrylic acid alkylester compound or an acrylic acid alkylester compound, (ii) 15-30 parts by weight of an aromatic vinyl compound, and (iii) 1-20 parts by weight of a vinylcyan compound, wherein a total refraction coefficient of the composition, excluding polybutadiene rubber latex, is between 1.510 and 1.526. The refraction coefficient of the components above can be calculated using the following formula:

$$1.49 X_A + 1.59 X_B + 1.518 X_C = \text{Refraction Coefficient of Polymer}$$

In the formula above,  $X_A$ ,  $X_B$  and  $X_C$  are the weight ratios of methyl methacrylate, styrene, and acrylonitrile, respectively. As indicated by the Examiner, the refraction coefficients of methyl methacrylate, styrene, and acrylonitrile are 1.49, 1.59, and 1.518, respectively. If the weight ratios of methyl methacrylate, styrene, and acrylonitrile are 40, 30, and 1 part by weight, respectively, the refraction coefficient of the polymer of these three components exceeds 1.53, and the presently claimed range. Therefore, the Examiner's assertion that the total refraction coefficient will likely fall within the claimed range is incorrect.

Applicants assert that the claimed property, *i.e.*, total refraction coefficient of the composition, excluding the polybutadiene rubber latex, between 1.510 and 1.526, is required to achieve a thermoplastic resin composition with the desired transparency. The refraction coefficient of the polymer of the components above has a direct influence on the transparency of the thermoplastic resin composition (specification, page 5, lines 18-19) and is regulated by the mixture ratio of the monomers. Furthermore, since the refraction coefficient of polybutadiene is approximately 1.518, the refraction coefficient of the remaining grafted components must fall in

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the claimed range to produce a composition of the desired high level of transparency (specification, page 5, lines 20-22).

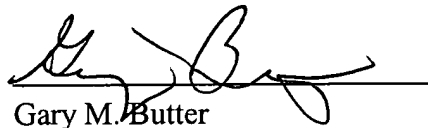
In fact, there is no teaching in Yumoto *et al.*, JP 56-41216, or Kim *et al.* that the total refraction coefficient of the composition, excluding the polybutadiene rubber latex, must fall within the claimed range of between 1.510 and 1.526. Since the cited art, alone or in combination, fails to teach each and every element of the claimed invention, Applicants submit that claims 1, 2 and 5-11 are patentable under 35 U.S.C. § 103(a) over Yumoto *et al.*, JP 56-41216, and Kim *et al.*

CONCLUSION

Based on the foregoing remarks and in light of the amendments, Applicants submit that the present application is in condition for allowance. A Notice of Allowance is therefore respectfully requested.

Applicants do not believe that any fee is due with the submission of this paper. Should any additional fees be required in association with this communication or should any overpayment be made, the Commissioner is hereby authorized to charge an additional fees or credit any overpayments to Deposit Account Number 02-4377. A duplicate copy of this communication is enclosed.

Respectfully submitted,  
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Enclosures